Does neighbourhood ethnic concentration in early life affect subsequent labour market outcomes? A study across ethnic groups in England and Wales

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ABSTRACT

The impact of ethnic concentration in the neighbourhood on ethnic minorities' outcomes is a contested topic, with mixed empirical results. In this paper, we use a largescale longitudinal dataset of England and Wales, covering a 40-year period, to assess the impact of neighbourhood co-ethnic concentration in childhood on subsequent adult labour market outcomes. We distinguish the five main minority groups in the UK and develop theoretical expectations about how social interaction mechanisms in the neighbourhood might influence their employment and occupational attainment, given different group (cultural values, ethnic capital) and individual (gender) characteristics. By separating in time explanatory and explained variables, and by controlling for factors that mediate or confound co-ethnic concentration – such as neighbourhood deprivation, household resources in childhood (i.e. parental social class), and individuals' own education – our analytical model tackles potential problems of self-selection and endogeneity. Among other findings, we find that greater concentration of co-ethnics in the neighbourhood results in substantially lower labour market participation and lower occupational attainment for Pakistani and Bangladeshi women; but better occupational outcomes for Indian men. We link the outcomes for Pakistani and Bangladeshi women to cultural maintenance of more traditional norms, facilitated by greater social interaction. The results for Indian men, instead, suggest the positive role that high levels of group resources or "ethnic capital" can play. Our study is, we believe, the first to demonstrate a role for co-ethnic concentration in childhood in explaining Pakistani and Bangladeshi women's low labour market participation and Indian men's labour market success.

INTRODUCTION

The consequences of ethnic concentration on minority groups' economic outcomes remain a contested issue in research. One of the challenges is the fact that areas of minority group concentration are typically more deprived areas (Musterd, 2005). Hence, the well-attested negative effects of neighbourhood deprivation on individual outcomes may be confounded with ethnic group effects (Wilson, 1987). In addition, accounting for issues of selection and endogeneity when estimating neighbourhood effects further complicates the estimation of the impact of neighbourhood ethnic group concentration as minorities do not settle or relocate randomly.

In this paper we investigate the impact of neighbourhood ethnic group concentration when children were growing up on their subsequent adult occupational outcomes. Using a unique longitudinal data set for the UK covering a 40-year span, we assess the impact of own-group ethnic concentration among those who were children in 1971-1991 on their adult employment and social class outcomes in 2001 and 2011. By exploiting temporal sequencing of neighbourhood concentration and the economic outcomes of interest, by distinguishing neighbourhood deprivation from ethnic concentration and, finally, by considering a range of variables that characterize individuals (i.e. education) and the socio-economic context in which they grow up (i.e. parental occupation), we are able to address some of the issues of endogeneity and selection that vex the evaluation of neighbourhood effects, and are better able to isolate the impact of ethnic concentration *per se*.

The UK presents a valuable case study for investigating the effects of minority group concentration since it represents a country with an established, long-standing migrant-origin population. This study focuses on five groups: Indian, Pakistani, Bangladeshi, Caribbean and African. These migrants and their children (the subjects of our analysis) have contrasting migration histories and trajectories, settlement patterns, levels of educational and economic resources, cultural values and religion, and levels of spatial segregation (Catney, 2015, Catney *et al.*, 2015, Crawford *et al.*, 2015, Longhi *et al.*, 2013, Modood *et al.*, 1997, Phillips, 1998, Platt, 2007), which may all play a role in the way neighbourhoods affect their labour market outcomes. By looking at five distinctive ethnic groups we are able to investigate not only whether co-ethnic concentration matters, but also to what extent this effect might be connected to characteristics of the groups.

MECHANISMS OF NEIGHBOURHOOD EFFECTS AND GENERAL EXPECTATIONS

There is a longstanding interest in the impact of neighbourhood context or setting on individual outcomes (Sampson *et al.*, 2002, Sharkey *et al.*, 2014, van Ham *et al.*, 2012). Within this literature, a more specific body of research has been dedicated to the effects of ethnic composition of neighbourhoods (Becares *et al.*, 2011, Clark *et al.*, 2002, Knies *et al.*, 2014, Sturgis *et al.*, 2011, Urban, 2009). In a comprehensive review, Galster (2012) identified four main mechanisms by which neighbourhoods impact individual lives net of individual characteristics: social interaction, geographical, institutional and environmental mechanisms.

Social interaction mechanisms refer to those various processes that arise as a consequence of social contact among individuals in the neighbourhood. Among these, there are those identified as 'collective socialisation', which refer to the role that (interconnected) adults – sometimes linked to relevant institutions such as schools and libraries – may play in reinforcing local social norms and influencing the behaviours of both adults and children (Leventhal *et al.*, 2000, Sampson, 1997). There are also 'social network' processes, deriving from more or less daily contact with others living in the same area, which can provide routes for exchange of information and resources of various kinds (Bourdieu, 1977). In relation to minorities, networks can be particularly valuable for those who have just arrived in a country (Phillips, 2006) or those entering their first job or seeking re-employment (Dustmann *et al.*, 2015, Granovetter, 1973). They may also lead to the development of ethnic entrepreneurship (Li, 2004, van Kempen *et al.*, 1998). On the other hand, such ethnic networks have also been conceived of as 'bad capital' (see e.g. discussions in Cheong *et al.*, 2007, Fernandez *et al.*, 2006), with a particular focus on them as more restricting 'bonding' ties, rather than the more positively conceived 'bridging' ties (Alba *et al.*, 2003, Lin, 2001) with the majority population. Finally, behaviours, aspirations and attitudes of children and adults, may also be (positively or negatively) influenced by contact with peers, a process sometimes referred to as 'social contagion'.

There are also those features of the neighbourhood that, rather than reflecting the composition of the neighbourhood, derive their impacts either from physical factors (*environmental mechanisms)* – such as air, noise and water pollution – or from the relative position of the neighbourhood in geographical and socio-political terms (*geographical mechanisms*). For example, certain neighbourhoods might have little accessibility, either in

spatial proximity or mediated by local transportation, to job opportunities ('spatial mismatch'); or they might suffer from local mismanagement of public services, which might in turn affect outcomes such as education and health. Finally, Galster invokes the term *institutional mechanisms* to refer to factors such as the quality of private or public services, including schools, hospitals or day care centres, but also the stigmatization of particular areas (and hence their residents), which may impact on both opportunities and self-concept (see also Bauder, 2002). Numerous studies of neighbourhood effects have focused on these geographical and institutional mechanisms, studying the impact of concentration of poverty or disadvantage on a variety of child, adolescent and adult outcomes (Atkinson *et al.*, 2001, Buck, 2001, Feng *et al.*, 2015, Galster *et al.*, 2013). Similarly, stigmatization has been explored in a famous work by Wacquant (1993), who showed how individuals living in the black American ghetto and in the Parisian 'banlieu' tend to be discriminated against by employers, based on their place of residence.

Inspection of these various mechanisms can usefully distinguish those that may link ethnic composition of children's neighbourhoods to their subsequent labour market outcomes. While ethnic minorities may be overrepresented in areas with greater levels of noise pollution, spatial mismatch or neighbourhood deprivation, these factors do not constitute 'ethnic' effects *per se*; nor is there reason to expect that they operate differently for (particular) minority groups. By contrast, social interaction mechanisms are likely to be fostered by concentration of (own) ethnic group; while areas of ethnic concentration, especially if combined with poverty may be particularly susceptible to stigmatisation. Amongst these two main mechanisms, however, we believe that it is social interaction that is more important in helping to understand neighbourhood effects on second generation ethnic minorities. This is for two reasons, first we are looking at the impact of the neighbourhood context in which individuals grew up; but stigma typically applies to current place of residence. It is theoretically implausible to propose that employers or other significant actors directly take account of the location that someone lived in as a child (unless for example a particular school they were known to attend has a particularly bad reputation). Any impacts of stigma impacting the family of the child should instead be captured in the measures of social background we employ in our analysis. Second, evaluating the role of neighbourhood-based stigma is challenging without detailed ethnographic work of the kind conducted by Wacquant.

Turning to social interaction mechanisms, we expect that social networks and the social environment are particularly strong during upbringing (Urban, 2009). Furthermore, we expect that the role of ethnic group concentration when growing up will depend on the group itself, on the structural position of the group and on the gender of their members. 'Collective socialisation' is often seen as having positive consequences in terms of norm enforcement and cultural maintenance (Portes *et al.*, 1993), being supported by and supporting group-specific services, such as access to local churches, groceries with certain types of food, or dedicated activities in social centres. This has been argued to be one of the reasons why Pakistanis and Bangladeshis (particularly older individuals and married women) often manifest a preference for these neighbourhoods (Bowes *et al.*, 2002, Phillips, 2006). Moreover, the daily contact with co-ethnics that these cultural contexts promote may even have positive effects for life satisfaction (Knies *et al.*, 2014) and local attachment (Kohlbacher *et al.*, 2015). However, those norms could also have ambiguous or, indeed negative, effects on economic outcomes for certain groups or subpopulations, especially if experienced from early life. Previous studies have suggested that migrants coming from countries where there is less gender equality show less gender-egalitarian attitudes compared to other migrants or the local populations in Europe (Röder *et al.*, 2014). In these communities, men are often considered as the 'main providers', what Peach (2005) calls the 'patriarchal model'. Women growing up in environments where these values predominate – i.e. high co-ethnic concentration neighbourhoods – might therefore see their economic participation in adult life negatively affected (see also Andersson *et al.*, 2014). We would expect this to occur more for Pakistani, Bangladeshi and Indian women.

Spatial proximity with greater numbers of co-ethnics might also foster the proliferation of 'social networks' (a second form of social interaction mechanisms) and facilitate the exchange of information. In line with Borjas (1992) discussion of 'ethnic capital', the extent to which neighbourhood concentration is likely to promote or limit opportunities will depend on large part on the number of well-positioned members of the group living in the area. For children raised in these neighbourhoods, we would expect better employment and occupational outcomes where group resources (education, employment) are high(er) and where cultural maintenance is also relatively high – fostering in-group contact (Portes *et al.*, 2005). This is the case, for example, of the Indian population, which displays many features of the aspiring migrant stereotype, with high levels of employment and participation in qualified jobs, educational resources and upwardly mobile trajectories (Platt, 2007, Zuccotti,

2015). Conversely, we would expect that the effect of being raised in high-concentration neighbourhoods would be negative where group resources are lower: for example, Pakistani and Bangladeshi populations are among the most segregated groups and those with the lowest average level of economic resources in the family of origin.

Finally, 'social contagion' effects might influence the attitudes and aspirations of the second generation. These could again be both positive and negative with increasing concentration. First, the selection of immigrants has been much discussed in the literature. They typically migrate intending to gain not only a better life for themselves, but (especially) for their children. They thus tend to carry - and transmit - high aspirations (Kao *et al.*, 1998, Strand, 2011). Higher concentration may foster occupational attainment through high parental expectations, which are likely to be transmitted via educational attainment (Burgess, 2014). However, the second generation may also experience a dissonance between parental and own expectations and the reality they face, in terms of realised opportunities (Heath *et al.*, 2013, Platt, 2014); and in such instances 'contagion' could act as a discouraging influence.

ADDRESSING SELECTIVITY AND ENDOGENEITY

Selection and endogeneity are two fundamental issues much discussed in the neighbourhood effects literature (Bergström *et al.*, 2012, Dietz, 2002, Galster *et al.*, 2013). The problem of selectivity refers to the fact that individuals choose where to live and, in consequence, individual characteristics might affect both this residential decision and the outcome under study. The problem of endogeneity, on the other hand, is related to the fact that the choice of neighbourhood is usually associated with other choices – such as the type of tenure – and these other factors might in turn affect the outcome under study.

The originality of our design, which helps tackle these problems, lies in the temporal distance between the explanatory variable – ethnic concentration – and the outcomes under study: employment and social class (for another example see Urban, 2009). We measure ethnic concentration when individuals are young (0-15 years old), while we evaluate their labour market outcomes when they are adults (20-45 years old). This entails theoretical and, in particular, methodological advantages.

Regarding *theoretical* advantages, it has been argued, following socialization theories, that social networks and the social environment when individuals grow up are more important than those later in life (Urban, 2009). In particular, cultural values and social roles

are learnt in this period, and contextual elements such as friendships, the ethnic composition of the school, or the presence of family members living close by might be fundamental to processes that impact socio-economic position in later life.

As for *methodological* advantages, by considering the neighbourhood of individuals when they are young we assume it was probably their parents (rather than they themselves) who chose it. Of course, it could be argued that there are unmeasured characteristics of parents that might influence the outcome variable, such as how they raise the children and their expectations of them. Moreover, parents may have chosen a neighbourhood with a higher share of co-ethnics because they want their children to work in particular ethnic niches or enterprises, or because they want their children to be in contact with other co-ethnics, thinking in terms of how these contacts could affect their future. In these cases, the effect of the neighbourhood would actually be capturing some unmeasured parental effect. Although we cannot entirely control for all this, we do consider other variables – such as parental social class and education – that probably capture at least some of these unmeasured characteristics of parents. Second, the temporal separation of dependent and independent variables, together with the control of a series of mediating variables, also helps solve the problem of endogeneity. By controlling for education, an indicator of the quality of schools in the origin neighbourhood, and other origin-level variables, such as tenure or level of household overcrowding, we hope to capture other factors that might be related to the choice of the area and to labour market outcomes.

DATA AND METHODS

Data and sample

We use the ONS Longitudinal Study (ONS-LS), a unique dataset that links census records for a 1 per cent sample of the population of England and Wales across five successive censuses (1971, 1981, 1991, 2001 and 2011). The original (1971) sample was selected based on those with one of four birthdays and the sample is updated each census with intercensal births and immigrations of those with the same birthdays. Slightly more than 500,000 individuals can be found at any census point. About 400,000 people provide records at any two census points; while there are linked records across all five censuses for around 200,000 individuals.

A critical feature of this dataset – in addition to its large sample – is that both household and aggregated census data can be attached to each individual and for each census point. That is, we have information on the co-resident parents of the individuals when they were children, on the characteristics of their households in childhood and adulthood, and we can also match in characteristics of the neighbourhoods in which they reside at different periods.

For this study we exploit both individual and household-level information at each census point. We study individuals who were aged between 0 and 15 years old in 1971, 1981 and 1991 and lived with at least one parent (mother and/or father) at that time-point. These individuals are then followed up in 2001 and 2011, when they are between 20 and 45.[1] We therefore exclude those who, as a result of attrition, are not observed at one of the later time points. Attrition in the ONS-LS derives from eligible individuals not being enumerated at the relevant census, or errors in date of birth details, or through unregistered emigrations. Overall rates of attrition – around 18 per cent across the whole period (Office for National Statistics, 2014) – are nevertheless substantially lower than in conventional longitudinal surveys. While there is the risk that selective attrition may introduce bias, and there is some evidence that propensity to attrit differs by ethnicity and ethnic concentration of neighbourhood, existing evidence suggests that effects on estimates are small (Platt, 2005). The design allows us to separate the initial socio-economic and neighbourhood conditions in which individuals are raised – *origin* characteristics – from their outcomes when they are adults – *destination* characteristics.

The unit of analysis in this paper is not the individual but the pair of origin-destination variables. Given the age restrictions (individuals can be between 0 and 15 years old only in two census points) each individual can have up to 4 measurements (e.g. 1971-2001; 1971-2011; 1981-2001; 1981-2011). The total sample comprises around 14,000 observations covering around 6,300 individuals. All analyses adjust standard errors for repeat measurements on individuals.

Since our research question relates to neighbourhood effects for second generation ethnic minorities, we define the sample as those who identify themselves (as adults) as belonging to an ethnic minority group, using the self-reported ethnic group question in the

1 We excluded individuals aged 46-55, since they are only present in 2011.

2011 Census,[2] and, using information on parental country of birth, we include only those individuals where both parents were born abroad (or one, in the case of single-parent households). Note that this implies that some in our sample were themselves born abroad, and arrived in the UK as children: around half of Bangladeshis and fourth quarter of Pakistanis are in this situation, while the shares for the other groups are below 20 per cent). We focus the analysis on the five largest minority groups in the UK: Indian, Pakistani, Bangladeshi, Caribbean and African.

Dependent variables

We investigate the association of neighbourhood co-ethnic concentration with two outcome variables: employment and avoidance of a low social class. Employment is derived from current employment status at the time of the (2001 or 2011 Census), and contrasts being in paid work (employed or self-employed) with unemployed and certain inactive groups (doing housework, long-term sick/disabled and other). Social class measurement is based on either current or – if not currently in paid work – most recent occupation and is measured by the National-Statistics Socio-Economic Classification,[3] a 8-category social class classification based on the principles of the Erikson and Goldthorpe class schema (Erikson *et al.*, 1992). We study the chances of not belonging to ("avoidance of") the more undesirable routine or semi-routine occupations (NSSEC categories 6 and 7),[4] occupations that are very common in those neighbourhoods where ethnic minorities tend to live. An alternative class outcome, the attainment of a (higher class) professional or managerial position was also tested as it is commonly used in ethnic labour market analysis. The results were symmetric to our findings for lower social class and are not further discussed (tables available on request). Theoretically, we consider that whether ethnic concentration fosters or facilitates escape from more routine occupational trajectories is more relevant to the questions and processes addressed here. Full-time students are excluded from both employment and social class analyses.

[2] Where information on 2011 ethnic group is not available we use that from 2001, and in the few cases where that is also unavailable, 1991. This does not have a strong impact on the measure (Simpson 2014).
[3] See: http://www.ons.gov.uk/ons/guide-method/classifications/current-standard-classifications/soc2010/soc2010-volume-3-ns-sec--rebased-on-soc2010--user-manual/index.html.
[4] In this classification, long-term (> 1 year) unemployed individuals are not assigned an occupation within the NS-SEC.

Explanatory variables

The main explanatory variable that we are interested in is the neighbourhood concentration of co-ethnics, measured in quintile groups. Co-ethnic concentration is the product of two variables: a measure of ethnic concentration in the neighbourhood – expressed in population-weighted quintiles – and the ethnicity of the individual. Population weighted quintiles were constructed from aggregated census data at the Ward[5] level (around 5,000 people), using information on the number of Indians, Pakistanis, Bangladeshis, Caribbeans and Africans present in each Ward at each census-point. In total, five population-weighted quintile variables were created, one for each group. Quintile 1 refers to those areas containing the least concentrated 20 per cent of the group, while Quintile 5 refers to those areas where the most concentrated 20 per cent live. The final step was to attach the neighbourhood quintile to our sample cases based on their self-reported ethnicity, i.e. Indian neighbourhood concentration quintile was linked to individuals who self-identify as Indian etc. [6]

An important feature of co-ethnic concentration variables is that share of co-ethnics in Q5 is much higher for South Asian than for the Black populations, reflecting the general higher level of segregation of South Asian groups. In terms of our study, this implies that the probability of contact among co-ethnics in Quintile 5 is greater for Indians, Pakistanis and Bangladeshis than for Caribbeans and Africans. This can be observed in Table A1 in the Online Annex, where the average share of ethnic minorities in Wards by quintile and *origin* year is shown.

[5] The Ward is the key building block of UK administrative geography, and is used to elect local government councillors. Wards vary in terms of size and population. In general, the smallest and most populous ones are in metropolitan areas, where the majority of ethnic minorities are found. While other smaller-scale geographies are available for the UK (e.g. Output Areas and derived units), these can only be used from 2001 onwards. Data was collected from: http://casweb.mimas.ac.uk and https://neighbourhood.statistics.gov.uk/dissemination.

[6] By using quintiles we lose information: unfortunately, this is a limitation of the data connected to disclosure policies established by the Office for National Statistics. On the positive side, the use of quintiles facilitates the comparisons over time, given that it is a relative measure of neighbourhood composition. To create the quintiles, we used the best available measure of ethnicity for each census point: country of birth in 1971 and 1981; ethnic self-identification from 1991 onwards. Note that most individuals born in a certain country claim the ethnicity attached to that country (see http://www.ucl.ac.uk/celsius/online-training/ethnicity/et040200 for a relationship between country of birth and ethnicity in the ONS-LS). Nevertheless, some individuals born in India may be the children of white British colonial emigrants, who would then be included in 'Indian neighbourhoods' for the 1971-1981 censuses. Conversely, in 1971 it is not possible to distinguish East Africa, where many ethnic Indians come from, from the rest of Africa. Hence, for 1971 we undercount the number of 'Indian neighbourhoods'; and 'African neighbourhoods' (attached to self-identified Africans) may include some Indians. Additionally, in 1971 Bangladesh was not an independent state, but was part of Pakistan. Therefore, for 1971 we link Pakistani neighbourhoods to self-identified Bangladeshis. There were, however, very few Bangladeshis living in England and Wales in 1971.

The other key variable measured at neighbourhood level is neighbourhood deprivation, based on the commonly used Carstairs index (Norman, 2010, Norman *et al.*, 2005). This variable is also expressed in population-weighted quintiles. It is important to note that there is substantial overlap between ethnic minority concentration and area deprivation (see Table A2 in the Online Annex). We also include individual and household-level covariates. Individual level covariates comprise age, gender and level of education (measured as highest achieved qualification, according to standard secondary, post-secondary and tertiary education qualifications levels) in 2001 and 2011, when study members are adults. Household level covariates comprise parental social class of origin (specifically, the highest of either parent's occupational class, according to the Erikson and Goldthorpe class schema), and indicators of family resources, namely, number of cars, level of overcrowding and housing tenure, measured in 1971-1991, when study members are children. Other controls are: origin/destination years and number of waves in which the individual participated.

Analysis

We first explored the distribution of the five ethnic minority groups across the co-ethnic quintiles for each outcome. We then estimated a series of linear probability models, first aiming to establish the common effect of co-ethnic concentration, and then identifying specific group effects by interacting own ethnic group with co-ethnic concentration. In addition, we carried out a number of robustness checks to ensure that our results were not driven by the particular specification of our models. Specifically, we estimated the models for individuals rather than for all origin-destination pairs; we explored variation across different combinations of origin and destination years; we estimated restricted models for UK-born only and for those aged 4-15 in any origin year (given the mediating role of school). All the analyses presented here were robust to these checks (tables available on request).

DESCRIPTIVE STATISTICS

Table 1 shows the percentage of ethnic minorities employed and those who avoided a low social class, for each quintile of co-ethnic concentration in the neighbourhood where individuals lived as children. These are provided for the five ethnic groups pooled together and for each group individually, differentiating between men and women. Table 1 also shows the difference between Q1 – where concentration of co-ethnics is the lowest – and Q5 –

where the concentration of co-ethnics is the highest. A positive difference can be interpreted as a positive effect of living in a neighbourhood that has a low concentration of co-ethnics, while a negative indicates the opposite.

-- TABLE 1 --

Table 1 shows that there is an association between the share of co-ethnics in the neighbourhood and the outcomes under study for most groups and genders: a lower share of co-ethnics (Q1) leads to a better labour market outcome. The influence of ethnic concentration, understood as a greater difference between Q1 and Q5, seems to be stronger for the social class variable and for the employment of women. There are also both group and gender effects: Pakistanis and Bangladeshis (in particular women) seem to be the most affected by the level of concentration of their origin neighbourhood. For example, while for the five female groups pooled together having been raised in Q5 (vs. Q1) reduces the probability of being employed by 7 percentage points, for Pakistani and Bangladeshi women the gap is 19 percentage points.[7] Caribbean men (especially in terms of occupation) also seem to suffer negative consequences of co-ethnic concentration, while Indians are in a better relative position. Finally, for Africans, the results are not consistent. This is, however, the group for whom we have the smallest sample sizes.

Table 1 suggests that ethnic concentration is negatively related to labour market outcomes of ethnic minorities. However, we know from previous studies that own education, socio-economic resources of the family of origin and neighbourhood deprivation have an impact on labour market outcomes; and our data show that minorities raised in areas with a high concentration of co-ethnics are in general more likely to be raised in highly deprived areas, to have lower parental social class backgrounds, to have been raised in households with no car and with higher levels of overcrowding, and to have lower levels of education (see Table A2 in the Online Annex). The poorer labour market outcomes observed for those raised in Q5 (see Table 1) might therefore actually stem from the association of ethnic concentration with these other predictors of labour market outcomes. We therefore next estimate multivariate models that seek to isolate any effect of co-ethnic concentration, net of these confounders.

[7] Interestingly, the negative effect is observed both for UK- and foreign-born minorities.

Tables 2 and 3 show the impact of quintile of co-ethnic concentration on the probability of employment (Table 2) and of avoidance of a low social class (Table 3), with separate models for men and women. Models 1a and 1b estimate the overall effect of co-ethnic concentration for the five ethnic minority groups; while Models 2a and 2b add interactions between ethnic group and co-ethnic quintile (only Q5 is shown). In (a) we only control for origin and destination years, number of census points and age; while in (b) we also include neighbourhood deprivation, origin-level variables (class of origin, tenure, number of cars and number of persons per room) and the study member's achieved educational level. The coefficients, derived from linear regressions with robust (clustered) standard errors, refer, when multiplied by 100, to the difference in percentage points from the reference category. We provide only the effects for co-ethnic concentration and ethnic group. Full tables can be found in Tables A3 and A4 in the Online Annex.

-- TABLE 2 --

-- TABLE 3 --

Models 1a (men/women) of Table 2 show that ethnic minorities raised in a neighbourhood with a higher concentration of co-ethnics are relatively less likely to be employed. Men and women are, respectively, around 3 and 8 percentage points less likely to be employed if raised in quintile 5 instead of in quintile 1. These effects become statistically non-significant once all control variables have been added (Model 1b, men/women), suggesting they are driven by social background and neighbourhood deprivation. However, when adding interaction effects between ethnic group and co-ethnic quintile, the results show that for Pakistani and Bangladeshi women there is a substantial negative effect of being raised in Q5. Although the negative effects reduce once we add controls (Model 2b, women), they are still considerable: Pakistani women raised in Q5 are around 11 ((0.042-0.148)*100) percentage points less likely to be in employment than those raised in Q1, even net of their education and family origins, while the value is 13 percentage points for Bangladeshi.

Moving to the analysis of social class (Table 3), we find that mong men (Models M1a and M1b), neighbourhood deprivation and social background variables account for practically all the disadvantage experienced by those raised in Q5 (when compared to those

raised in Q1); but for women, the disadvantage remains statistically significant. Specifically, if raised in Q5 – instead of in Q1 – women have on average 4 percentage points lower probability of avoiding the lowest qualified occupations. When adding the interactions with ethnic group, we find that before controlling for background characteristics (Models 2a, men/women) the effect of having been raised in Q5 (vs. Q1) is negative for most groups, in particular Pakistani and Bangladeshi. After controlling for neighbourhood deprivation, origin household characteristics and education, we observe a positive effect of Q5 for Indian men, who are around 7 percentage points more likely to avoid a low social class if they lived at a young age in areas with a relatively higher share of co-ethnics. For Bangladeshi, Caribbean and African men, we found a penalty that varies between 7 and 10 percentage points if raised in Q5. Moving to women, Pakistanis and Bangladeshis are 12-13 percentage points less likely to avoid low occupations if raised in Q5, compared to those raised in Q1.

Overall, the effect of being raised in areas with a high share of co-ethnics seems to impact negatively on women's labour market outcomes, specifically Pakistani and Bangladeshi women, who are disadvantaged both in access to employment and type of occupation. Among men, Bangladeshis, Caribbean and Africans are disadvantaged in terms of occupation. Indian men are the only group that gain an occupational advantage if raised in Q5.

DISCUSSION

This paper set out to identify whether having lived at a young age in an area with a high share of co-ethnics exerts an effect on labour market outcomes in later life among second generation ethnic minorities in England and Wales. We used a design that partly reduced the problem of self-selection and endogeneity, thanks to the temporal distance between explanatory and explained variables: we assumed that it was parents (and not study members) who decided on the location. Furthermore, by introducing neighbourhood, household and individual controls (also measured at different time points), which acted both as predictors of our dependent variables, but also of parental allocation into neighbourhoods, we reduced the impact of parental self-selection.

Drawing on the mechanisms of neighbourhood effects identified by Galster (2012), we argued that social interaction mechanisms – expressed in terms of collective socialization, social networks and social contagion processes – are probably most appropriate to account

for the impact of co-ethnic concentration on minority groups' outcomes, given that we explored neighbourhood effects that emerge when individuals are young. In general, our findings followed our expectations. In particular, we identified a positive effect of having grown up in an area of greater own group concentration for the occupational attainment of Indian men and a clear negative effect for Pakistani and Bangladeshi women, both in terms of their employment probabilities[8] and occupation. Moreover, we also found some evidence for a negative effect on Bangladeshi, Caribbean and African men's occupational outcomes.

While there are a large number of studies that document the low labour market participation of Pakistani and Bangladeshi women, this is, to our knowledge, the first study that has shown a connection between this outcome and the concentration of co-ethnics in their neighbourhood when growing up. Pakistanis and Bangladeshis are known to have high levels of traditional gender norms and patriarchal views, and this study indicates that spatial concentration is likely to make women in these communities more subject to these cultural constraints, via social interaction. This is then translated into lower labour market participations and poorer occupational outcomes in later life, compared to those brought up in less concentrated areas.[9]

Similarly, this study also contributes to explaining the successful labour market outcomes of Indian men in the UK, often noted in the literature (Longhi *et al.*, 2013, Modood *et al.*, 1997). The quality of the Indians' social networks – their 'ethnic capital' – in terms of both educational and socio-economic resources is likely to account for the gain that Indian men experience in their occupational opportunities if raised in areas where other Indians live. Rather than a constraint, having been raised close to co-ethnics constitutes an asset (note, however, that this does not hold for women, who are likely to experience some of the cultural constraints faced by Pakistani and Bangladeshi women). Supporting this argument is the fact that this positive effect does not seem to hold in additional analysis covering the East Midlands region, where spatial segregation of Indians is high, but where Indian neighbourhoods are deprived and Indians themselves have, in general, jobs with lower qualifications.

[8] Analyses performed separately for activity and employment (among the active) show a penalty for Pakistanis and Bangladeshis in both dimensions. Indian women raised in quintile 5 have instead a higher probability of being active. Future analyses focused on women only are needed to explore these issues in more detail.
[9] This effect does not disappear when we consider the current neighbourhood, which strengthens the argument for early socialization.

As for the negative effect found for Bangladeshi and Black men, we could think – in line with social network mechanisms – that the worse-off minorities are located in the most ethnically concentrated areas, and that there is a negative social contagion group effect, potentially shaped by contexts of reception (Portes *et al.*, 2005). However, there may also be institutional mechanisms playing a role, in particular for Bangladeshis, who are highly segregated populations. Although we argued that it is hard to conceive in line with the stigmatization hypothesis that employers will base their decisions on the neighbourhood in which individuals were raised, it might be a plausible explanation given that the current and origin neighbourhoods are usually closely related in terms of their characteristics. This invites further investigation.

The results presented in this paper suggest that co-ethnic effects driven by on the one hand cultural reinforcement and on the other group resources or "ethnic capital" do occur and therefore play out, at the neighbourhood level, in ways that have separate implications for different groups and genders. Neighbourhood effects can have both positive and negative impacts on socio-economic outcomes, regardless of other domains of life, such as life satisfaction or access to asocial and cultural resources, which may be equally important. These effects are, however, modest. Deprivation is a central means by which neighbourhood impacts on the life-chances of children brought up in more ethnically concentrated areas; and this is also strongly mediated by education as well as family socio-economic background.

In view of this, asking whether ethnic concentration is positive or negative – which is a frequent question both in the literature and, especially, in public and political discourses – is perhaps, not only an oversimplification, but also the wrong question. Social interaction within the neighbourhood can mean different things for different ethnic groups and genders, and this is reflected in the outcomes we observe. Our results present suggestive evidence in this direction, even if the mechanisms underlying the observed neighbourhood effects remain somewhat speculative within the limitations of our data. More in-depth research, potentially combining qualitative as well as quantitative analysis, would substantiate our findings and further elucidate the mechanisms underlying the effects of co-ethnic concentration.

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Table 1: Access to employment and avoidance of low social class (in %) by quintile of co-ethnic concentration (Q1=lowest concentration; Q5: highest concentration)

	Men						Women					
	Q1	**Q2**	**Q3**	**Q4**	**Q5**	**Q1-Q5**	**Q1**	**Q2**	**Q3**	**Q4**	**Q5**	**Q1-Q5**
Employment												
5 groups	*83.3*	*84.4*	*82.9*	*82.3*	*80.9*	*2.4*	*74.1*	*69.5*	*69.2*	*68.7*	*66.9*	*7.2*
Indian	89.0	88.3	87.8	87.8	86.9	2.0	81.1	79.1	80.7	79.6	80.8	0.3
Pakistani	75.9	80.8	76.9	75.9	73.8	2.2	63.9	55.5	47.6	48.7	44.9	19.0
Bangladeshi	81.2	86.7	81.3	78.0	73.7	7.5	57.5	54.0	50.7	47.9	38.6	19.0
Caribbean	82.9	81.0	79.6	78.5	76.0	6.9	80.1	74.5	77.4	78.1	76.2	3.8
African	78.3	88.1	81.8	80.4	82.1	-7.5	82.4	81.1	82.4	74.7	76.2	6.2
Avoidance of low social class												
5 groups	*81.2*	*81.2*	*77.8*	*75.4*	*73.7*	*7.4*	*83.6*	*80.1*	*76.9*	*78.5*	*73.8*	*9.7*
Indian	83.6	90.0	82.6	81.0	81.0	2.6	85.3	87.2	85.6	81.4	78.9	6.4
Pakistani	80.9	78.4	71.6	73.4	67.4	13.5	84.7	74.6	61.1	70.6	59.8	24.9
Bangladeshi	81.3	78.8	72.7	67.8	60.7	20.6	79.7	64.1	65.3	66.7	63.0	16.7
Caribbean	75.6	70.7	74.0	66.4	64.8	10.8	83.0	79.2	79.2	81.7	81.9	1.1
African	100.0	74.4	81.1	77.8	77.8	22.2	70.6	87.8	80.8	91.3	80.0	-9.4
Totals: employment												
Indian	344	479	680	769	757		317	455	643	716	817	
Pakistani	216	360	372	431	404		280	364	393	423	490	
Bangladeshi	69	90	107	127	133		73	113	148	142	140	
Caribbean	216	279	279	307	204		261	373	349	334	282	
African	46	84	55	51	56		57	53	74	79	84	

	Men						Women					
	Q1	**Q2**	**Q3**	**Q4**	**Q5**	**Q1-Q5**	**Q1**	**Q2**	**Q3**	**Q4**	**Q5**	**Q1-Q5**
Totals: avoidance of low social class												
Indian	335	469	656	732	720		300	436	613	667	774	
Pakistani	199	328	334	384	359		249	311	311	320	391	
Bangladeshi	64	85	99	115	117		64	92	121	111	100	
Caribbean	205	266	262	292	182		253	351	318	311	260	
African	53	39	53	45	54		34	82	73	115	75	

Population: Individuals between 20 and 45 years old
Source: Authors' calculations from ONS-LS

Table 2: Access to employment among ethnic minorities.

	Men				Women			
	M1a	**M1b**	**M2a**	**M2b**	**M1a**	**M1b**	**M2a**	**M2b**
Co-ethnic quintile (ref. Q1: lowest concentration)								
Q2	0.013	0.027	-0.011	0.000	-0.046**	-0.031	-0.013	-0.008
	(0.0188)	(0.0179)	(0.0249)	(0.0239)	(0.0213)	(0.0205)	(0.0348)	(0.0337)
Q3	-0.010	0.019	-0.017	0.011	-0.055**	-0.021	0.003	0.014
	(0.0185)	(0.0183)	(0.0238)	(0.0237)	(0.0212)	(0.0212)	(0.0323)	(0.0313)
Q4	-0.017	0.018	-0.018	0.023	-0.062***	-0.027	-0.009	0.019
	(0.0184)	(0.0191)	(0.0234)	(0.0241)	(0.0211)	(0.0219)	(0.0324)	(0.0320)
Q5	-0.033*	0.008	-0.028	0.018	-0.076***	-0.034	0.004	0.042
	(0.0188)	(0.0201)	(0.0238)	(0.0254)	(0.0214)	(0.0228)	(0.0327)	(0.0333)
Ethnic group (ref. Indian)								
Pakistani	-0.101***	-0.062***	-0.128***	-0.090**	-0.295***	-0.227***	-0.166***	-0.137***
	(0.0149)	(0.0147)	(0.0414)	(0.0388)	(0.0185)	(0.0185)	(0.0443)	(0.0409)
Bangladeshi	-0.057***	0.003	-0.061	-0.025	-0.319***	-0.224***	-0.235***	-0.175***
	(0.0219)	(0.0228)	(0.0512)	(0.0483)	(0.0273)	(0.0273)	(0.0604)	(0.0573)
Caribbean	-0.088***	-0.032*	-0.070*	-0.006	-0.029	-0.007	-0.001	0.023
	(0.0166)	(0.0176)	(0.0373)	(0.0370)	(0.0185)	(0.0191)	(0.0423)	(0.0422)
African	-0.005	0.018	-0.091	-0.069	-0.006	-0.052*	0.032	0.003
	(0.0281)	(0.0287)	(0.1072)	(0.0997)	(0.0300)	(0.0310)	(0.0747)	(0.0766)
Ethnic group * co-ethnic quintile								
Pakistani * Q5			0.014	0.016			-0.191***	-0.148***
			(0.0497)	(0.0470)			(0.0559)	(0.0516)
Bangladeshi * Q5			-0.039	-0.011			-0.189**	-0.167**
			(0.0727)	(0.0704)			(0.0777)	(0.0720)

	Men				Women			
	M1a	**M1b**	**M2a**	**M2b**	**M1a**	**M1b**	**M2a**	**M2b**
Caribbean * Q5			-0.041	-0.066			-0.031	-0.059
			(0.0509)	(0.0493)			(0.0536)	(0.0525)
African * Q5			0.105	0.108			-0.068	-0.107
			(0.1184)	(0.1088)			(0.0946)	(0.0937)
Adjusted R-squared	0.036	0.079	0.035	0.078	0.095	0.166	0.097	0.167
N	6,850	6,850	6,850	6,850	7,437	7,437	7,437	7,437
Base model[1]	X	X	X	X	X	X	X	X
Neighbourhood, household and education controls[2]		X		X		X		X

[1] Controls for: age, origin year, destination year and number of census points.
[2] Adds: Carstairs deprivation quintile at the ward level; tenure, number of persons per room, number of cars and class of origin; and education
* p-value<.10 ** p-value<.05 *** p-value<.01; robust (clustered) (clustered) standard errors in parentheses
Population: Individuals between 20 and 45 years old
Source: Authors' calculations from ONS-LS

Table 3: Avoidance of a low social class (semi-routine and routine occupations) among ethnic minorities.

	Men				Women			
	M1a	**M1b**	**M2a**	**M2b**	**M1a**	**M1b**	**M2a**	**M2b**
Co-ethnic quintile (ref. Q1: lowest concentration)								
Q2	0.001	0.036*	0.061**	0.083***	-0.040**	-0.011	0.019	0.042
	(0.0205)	(0.0188)	(0.0282)	(0.0260)	(0.0195)	(0.0183)	(0.0303)	(0.0271)
Q3	-0.045**	0.021	-0.015	0.038	-0.076***	-0.023	0.004	0.039
	(0.0207)	(0.0196)	(0.0302)	(0.0272)	(0.0195)	(0.0192)	(0.0279)	(0.0265)
Q4	-0.070***	0.015	-0.031	0.057**	-0.062***	-0.006	-0.038	0.014
	(0.0208)	(0.0206)	(0.0301)	(0.0276)	(0.0195)	(0.0202)	(0.0296)	(0.0282)
Q5	-0.092***	0.004	-0.032	0.070**	-0.110***	-0.039*	-0.065**	0.008
	(0.0218)	(0.0225)	(0.0312)	(0.0296)	(0.0204)	(0.0219)	(0.0298)	(0.0299)
Ethnic group (ref. Indian)								
Pakistani	-0.090***	-0.014	-0.026	0.025	-0.136***	-0.061***	0.010	0.043
	(0.0169)	(0.0158)	(0.0425)	(0.0380)	(0.0183)	(0.0174)	(0.0355)	(0.0313)
Bangladeshi	-0.105***	-0.017	-0.007	0.049	-0.142***	-0.033	-0.021	0.069
	(0.0257)	(0.0253)	(0.0576)	(0.0547)	(0.0274)	(0.0278)	(0.0561)	(0.0592)
Caribbean	-0.145***	-0.066***	-0.089**	0.001	-0.031*	-0.012	-0.026	0.015
	(0.0199)	(0.0191)	(0.0439)	(0.0396)	(0.0178)	(0.0175)	(0.0402)	(0.0373)
African	-0.009	-0.005	0.125**	0.140***	0.008	-0.056**	-0.125	-0.149*
	(0.0368)	(0.0337)	(0.0520)	(0.0515)	(0.0285)	(0.0279)	(0.0801)	(0.0806)
Ethnic group * co-ethnic quintile								
Pakistani * Q5			-0.097*	-0.077			-0.192***	-0.143***
			(0.0545)	(0.0485)			(0.0512)	(0.0465)
Bangladeshi * Q5			-0.171**	-0.158**			-0.114	-0.124
			(0.0805)	(0.0761)			(0.0831)	(0.0805)

	Men				Women			
	M1a	**M1b**	**M2a**	**M2b**	**M1a**	**M1b**	**M2a**	**M2b**
Caribbean * Q5			-0.089	-0.139**			0.060	-0.003
			(0.0639)	(0.0575)			(0.0528)	(0.0494)
African * Q5			-0.133	-0.167**			0.149	0.068
			(0.0872)	(0.0829)			(0.0961)	(0.0927)
Adjusted R-squared	0.048	0.179	0.049	0.180	0.039	0.154	0.047	0.158
N	6,444	6,444	6,444	6,444	6,685	6,685	6,685	6,685
Base model[1]	X	X	X	X	X	X	X	X
Neighbourhood, household and education controls[2]		X		X		X		X

[1] Controls for: age, origin year, destination year and number of census points.
[2] Adds: Carstairs deprivation quintile at the ward level; tenure, number of persons per room, number of cars and class of origin; and education
* p-value<.10 ** p-value<.05 *** p-value<.01; robust (clustered) (clustered) standard errors in parentheses
Population: Individuals between 20 and 45 years old
Source: Authors' calculations from ONS-LS